

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-53 (Canceled)

Claim 54 (New): A method for characterizing, quantifying, mapping or analyzing unmarked molecule(s) fixed on a support, wherein said unmarked molecule(s) is a nitrogenous base or a nucleic acid comprising:

illuminating the molecule(s) by light originating from an excitation source or pump beam, and

detecting or measuring the absorption, deviation or reflection of light originating from the excitation source by the molecule(s) using a probe beam.

Claim 55 (New): The method of Claim 54, wherein said support is glass.

Claim 56 (New): The method of Claim 54, wherein said support is oxidized silicon.

Claim 57 (New): The method of Claim 54, wherein said support is plastic.

Claim 58 (New): The method of Claim 54, wherein said support is gel.

Claim 59 (New): The method of Claim 54, wherein said molecule(s) is a nitrogenous base.

Claim 60 (New): The method of Claim 54, wherein said molecule(s) is a nitrogenous base selected from the group consisting of A, T or U.

Claim 61 (New): The method of Claim 54, wherein said molecule(s) is a nitrogenous base selected from the group consisting of G or C.

Claim 62 (New): The method of Claim 54, wherein said molecule(s) is an oligomer comprising two or more nitrogenous bases.

Claim 63 (New): The method of Claim 54, wherein said molecule(s) is an oligomer or a nucleic acid which has been synthesized on said support.

Claim 64 (New): The method of Claim 54, comprising detecting or measuring the absorption, deviation or reflection of light originating from the excitation source by a nitrogenous base of a nucleic acid using a probe beam.

Claim 65 (New): The method of Claim 54, wherein said molecule(s) is a ribonucleic acid.

Claim 66 (New): The method of Claim 54, wherein said molecule(s) is a deoxyribonucleic acid.

Claim 67 (New): The method of Claim 54, wherein said molecule(s) is illuminated by a pump beam which is coherent.

Claim 68 (New): The method of Claim 54, wherein said molecule(s) is illuminated by a pump beam which is incoherent.

Claim 69 (New): The method of Claim 54, wherein said molecule(s) is illuminated by a pump beam which is an argon laser with a wave length of 275 nm.

Claim 70 (New): The method of Claim 54, wherein said molecule(s) is illuminated by a pump beam which is a solid laser with a wave length of 266 nm.

Claim 71 (New): The method of Claim 54, wherein the probe beam has a wavelength ranging from 400 to 700 nm.

Claim 72 (New): The method of Claim 54, wherein the probe beam is different than the pump beam.

Claim 73 (New): The method of Claim 54, wherein the probe and pump beams intersect at the maximal thermal gradient.

Claim 74 (New): The method of Claim 54, wherein the probe and pump beams are arranged in a transverse configuration.

Claim 75 (New): The method of Claim 54, wherein the probe and pump beams are arranged in an approximately collinear configuration.

Claim 76 (New): The method of Claim 54, wherein the probe beam passes through the solid support.

Claim 77 (New): The method of Claim 54, wherein the probe beam passes through the molecule(s).

Claim 78 (New): The method of Claim 54, wherein the reflection of the probe beam is detected.

Claim 79 (New): The method of Claim 54, wherein the refraction of the probe beam is detected.

Claim 80 (New): The method of Claim 54, wherein the absorption of light from the pump beam by the molecule(s) is measured.

Claim 81 (New): The method of Claim 54, wherein the absorption of light from the pump beam is measured within a spectral range of 200 to 300 nm.

Claim 82 (New): The method of Claim 54, wherein the absorption of the pump beam parallel to the molecule(s) (P polarization) is measured to optimize the detection sensitivity.

Claim 83 (New): A method for synthesizing an oligonucleotide or nucleic acid on a solid substrate, comprising:

coupling a nitrogenous base to a solid substrate,
at least one cycle of coupling one or more additional nitrogenous bases to the nitrogenous base fixed to the solid substrate or to the oligonucleotide fixed to the solid substrate to form an oligonucleotide or nucleic acid, and
characterizing, quantifying, mapping or analyzing the oligonucleotide or nucleic acid synthesized on said substrate by the method of Claim 54.

Claim 84 (New): The method of Claim 83, wherein
said synthesizing comprises multiple cycles of coupling a nitrogenous base to a nitrogenous base or oligonucleotide fixed on the support, and

said method comprises characterizing, quantifying, mapping or analyzing the nitrogenous based or the oligonucleotide fixed on the support after each synthesis cycle.

Claim 85 (New): A method for making a biochip which comprises an oligonucleotide or nucleic acid fixed to a support, comprising:

synthesizing on the surface *in situ* an oligonucleotide or nucleic acid, and
characterizing, quantifying, mapping or analyzing said oligonucleotide or nucleic acid on said surface by the method of Claim 54.

Claim 86 (New): The method of Claim 85, wherein

said synthesizing comprises at least one cycle of coupling a nitrogenous base to a nitrogenous base or to an oligonucleotide fixed on the support, and

said method comprises characterizing, quantifying, mapping or analyzing the nitrogenous base or the oligonucleotide fixed on the support after each synthesis cycle.